



# Insulation Depth Gauges

*California Building Energy Efficiency Standards  
Revisions for July 2003 Adoption*

November 5, 2001

---

## **Description**

One of the advantages of blown attic insulation is that it completely covers the ceiling joists, minimizing the thermal bypass effect of the joists. However, if blown unevenly, the increased heat loss in the thin spots can more than offset this advantage. It can be difficult for the insulation contractor to verify the insulation depth during installation, and it is even more difficult for the building inspector to verify the depth, as the inspector would have to climb and/or crawl through the roof trusses and insulation to inspect points far away from the attic access.

One solution is to require color-coded depth gauges be installed in a grid pattern on the ceiling joists prior to blowing the insulation. These gauges would allow the insulation contractor to achieve better quality control in the installation, and would allow the building inspector to more readily verify the work using a pair of binoculars.

The depth gauges could take a variety of forms, including a plastic gauge that clips over the joist, or a cardboard stick that is stapled to the side of the joist.

---

## **Benefits**

The use of depth gauges would help ensure that blown insulation is installed evenly, and to the depth required by the Standards. This will result in improved performance of the attic insulation system, saving both heating and cooling energy.

### Environmental Impact

No significant issues have been identified.

### Type of Change

**Mandatory Measure**      The change would add or modify a mandatory measure. Mandatory measures must be satisfied with either the prescriptive or performance compliance methods.

The proposed change expands the scope of the Standards to include depth gauges for blown insulation.

This change would affect the Standards and manuals.

### Measure Availability and Cost

This change has not been researched to determine whether depth gauges are currently manufactured. If not, then lead time will be required for the industry to provide this product.

The Commission is investigating construction quality. Assuming insulation depth is one of the parameters in the study, then the findings could be the basis for defining the baseline condition.

Costs are not currently known. Mass produced, we estimate the gauges could sell in bulk for about \$0.10 each. Installation of 100-200 gauges might take 1-2 hours, for a total cost of \$60-\$120 per home.

#### Useful Life, Persistence and Maintenance

Not applicable

#### Performance Verification

This technology assists in performance verification.

#### Cost Effectiveness

Our limited experience suggests that the use of depth gauges may improve the overall resistance of an attic by 20% or more.

#### Analysis Tools

Any of the existing building simulation programs could be used to demonstrate the efficacy of this measure.

#### Relationship to Other Measures

No other measures are affected by this change.

#### Bibliography and Other Research

This measure is proposed based on the personal design experiences of J. Hirsch & Associates. Currently, this submittal is intended as a place holder to identify this topic as a subject that the Standards do not address. Further study will be required to develop the proposed regulations; however no funding source has been identified for this study.